

Impact of School-Based Health Education on Knowledge and Practice Regarding Oral Hygiene among the Primary School Children in A Rural Community of Karnataka, India

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ABSTRACT

Background: The oral cavity is the gateway to the body. Oral health education always begins with awareness of oral health. **Aim:** This study aimed to determine the effectiveness of school-based health education on knowledge and practice regarding oral hygiene among the primary school children in rural areas of Tumkur, Karnataka, India and to find out various factors associated with it. **Materials & methods:** An Evaluative research approach with Pre-experimental one group pretest and posttest design and Non-probability purposive sampling technique were used to select 100 primary school children from rural community Karnataka, India. A self-structured knowledge questionnaire and practice checklist was used for assessing the knowledge and practice among the subjects. SPSS version 25 was used for data analysis. **Results:** There was a significant difference between the pre and post-intervention level of knowledge ($t = 41.7, p = 0.0001$) and practice ($t = 33.9, p = 0.0001$) regarding oral hygiene among the primary school children. There was an association between primary school children's knowledge score with their demographic variables like age ($\chi^2 = 10.3, p = 0.03$) and mothers educational status ($\chi^2 = 11, p = 0.01$). There was an association between primary school children's practice score with their demographic variables like age ($\chi^2 = 10.1, p = 0.04$), socioeconomic status ($\chi^2 = 8.9, p = 0.01$) and mothers educational status ($\chi^2 = 16.7, p = 0.001$). **Conclusion:** School-based health education was effective to enhance the knowledge and practice of oral hygiene among the primary school in rural communities.

KEYWORDS: Oral Hygiene, Primary School Children, School-Based Health Education, Knowledge and Practice, Rural Community

INTRODUCTION

A healthy mouth, teeth and gums, or oral health, is an essential part of overall sound health and quality of life. WHO defines oral health as "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial well-being." It's estimated that oral diseases upset 3.5 billion people globally, and untreated tooth decay/dental caries of permanent teeth was one of the most prevalent diseases worldwide in 2017. Poor oral health causes severe pain, discomfort, and can lead to disfigurement, social isolation, and even death. It also affects self-esteem, school performance, and presence at work or in education.^[1]

Over the past few years, health in India is gaining less importance, and oral health, the least.^[2] Prevalence of oral diseases is very high in India with dental caries (50%, 52.5%, 61.4%, 79.2%, and 84.7% in 5, 12, 15, 35–44, and 65–74 years old, respectively) and periodontal diseases (55.4%, 89.2%, and 79.4% in 12, 35–44, and 65–74 years old, respectively) as the two most common oral diseases.^[3] According to estimates, about 50% of school children are

suffering from dental caries and more than 90% of adults have periodontal diseases.^[4] The national oral health survey by the Indian dental association (2005), underlined that 95% of the population in India suffers from gum disease, just 50% use a toothbrush, and only 2% of the population visit the dentist. A majority of the Indians are unaware of the very fact that a sound oral health not only safeguards freedom from pain and suffering related to oral health problems but also essential for the general health improvement and boost of self-esteem, quality of life, and performance at work.^[5] Oral disease is a major public health problem with a high prevalence and incidence, especially in developing countries.^[6] In developing countries, there is a huge difference in oral health status between urban and rural people, with vast and widening inequalities in access to quality care, mostly in rural areas.^[7] According to the data from Dental Council of India, 72% of the people live in villages which remain deprived of dental care.^[8]

Good oral hygiene is the foundation of a healthy mouth and prevents 80% of all dental problems.^[9] By various researches, it has been found that the cause of increased prevalence rate of oral diseases in the children's is due to the lack of school-based proper health education. By educating

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the population about their oral health we can prevent the various oral diseases at the primary level.^[10,11]

India with its high population growth rate faces many challenges in delivering its oral health needs. Since 1940, the prevalence of dental caries in 5-year-old and 12-year-old schoolchildren in India has been progressively increasing.^[12] A large number of children and their parents in this country lack knowledge about the prevention of the most common oral diseases. A study reported that oral health knowledge among Indian children was low when compared to their Western counterparts.^[13] School is an important podium for learning. It not only contributes to an individual's education but also to their health and health-related behaviour.^[14] The WHO has provided "information series on school health" to advocate "health-promoting schools." They have also executed strategies for oral health promotion in schools.^[15]

Very limited experimental studies have been conducted to improve knowledge and practices of primary school children about oral hygiene in particular rural areas. This is the main reason researchers conduct the present study. The objectives of the study were to assess the effectiveness of school based health education on knowledge and practice regarding oral hygiene among the primary school children in rural areas at Tumkur, Karnataka, India and to find out the association between demographic variables with it.

MATERIAL AND METHOD

A evaluative research approach with Pre-Experimental, One group pretest posttest Design with non-probability purposive sampling method was used for the selection of 100 primary school children from rural communities of Tumkur, Karnataka, India. The study setting was Oorukere primary school, Tumkur, Karnataka, India. The tool used for

data collection consisted of 3 parts: Part 1: Socio-demographic data and Part II: self-structured knowledge questionnaire which consists of 30 items were used to assess the knowledge of primary school children regarding oral hygiene. Every item was of multiple choice types with one correct answer carrying 1 mark remaining options 0 marks. The minimum score 0 and maximum score was 30. The scores were graded as 21-30 adequate knowledge, 11-20 moderate knowledge and 0-10 inadequate knowledge. Part III:- Self-structured Practice checklist consists of 12 yes or no questions used for assessing the Practice of primary school children regarding oral hygiene. The total maximum score is 12 and the minimum score is 0. The score was graded as 0-4 poor practice, 5-8 average practice and 9-12 good practice. Content validity of the tool was determined by experts in the field of Nursing. The reliability of the knowledge and practice questionnaires was tested by using the spearman brown split half method and the score was found to be 0.79 and 0.71 for knowledge and practice respectively. The tool was prepared in English and Kannada to facilitate better comprehension. Preparation of school-based health education on oral hygiene and demonstration procedure on tooth brushing technique was developed keeping in mind the objectives, criteria, literature review, as well as expert's opinions. The study was approved by the Institutional Ethical Committee. Informed consent was obtained and the confidentiality and anonymity of the participants were maintained. Pre-test was conducted to know the knowledge and practice regarding oral hygiene among the primary school children and school-based health education was administered and the post-test was done after the gap of 7 days. The collected data were analyzed using descriptive and inferential statistics. SPSS version 25 was used for data analysis and 0.05 was the level of significance.

RESULTS

The major findings of the study were as follows:

Table 1: Frequency and percentage distribution of demographic variables of subjects (n=100)

Demographic variables	Frequency (F)	Percentage (%)
1. Age		
8 yrs	30	30
9 yrs	29	29
10 yrs	21	21
11 yrs	11	11
12 yrs	9	9
2. Sex		
Male	44	44
Female	56	56
3. Socio Economic Status		
Low	27	27
Middle	55	55
High	18	18
4. Father's Education		
Illiterate	24	24
Primary	43	43
Secondary	16	16
Higher secondary	14	14
Graduate	3	3

5. Mother's Education		
Illiterate	30	30
Primary	45	45
Secondary	18	18
Higher secondary	7	7
6. Father's occupation		
Labour	66	66
Agriculture	31	31
Employee	3	3
7. Mother's occupation		
House wives	43	43
Labour	36	36
Agriculture	21	21
8. No. of siblings		
One	24	24
Two	43	43
Three	22	22
Above three	11	11
9. Source of information		
No any information	29	29
Teacher	22	22
Mass media	47	47
Medical person	2	2
10. Monthly family income		
< 5000 INR	26	26
5000 -10000 INR	32	32
10001-15000 INR	34	34
>15000 INR	8	8

Table 1 displays that frequency and percentage distribution of demographic variables, the majority of the subjects 30% had 8 years of age, 56% were females, 55% were from middle class family, 43% of subjects father had primary education, similarly 45% of subjects mother had primary education, 66% fathers were laborers, 43% mothers were housewives, majority 43% had two siblings, 47% had previous source of information from mass media and majority 34% had family monthly income between 10001 to 15000 INR.

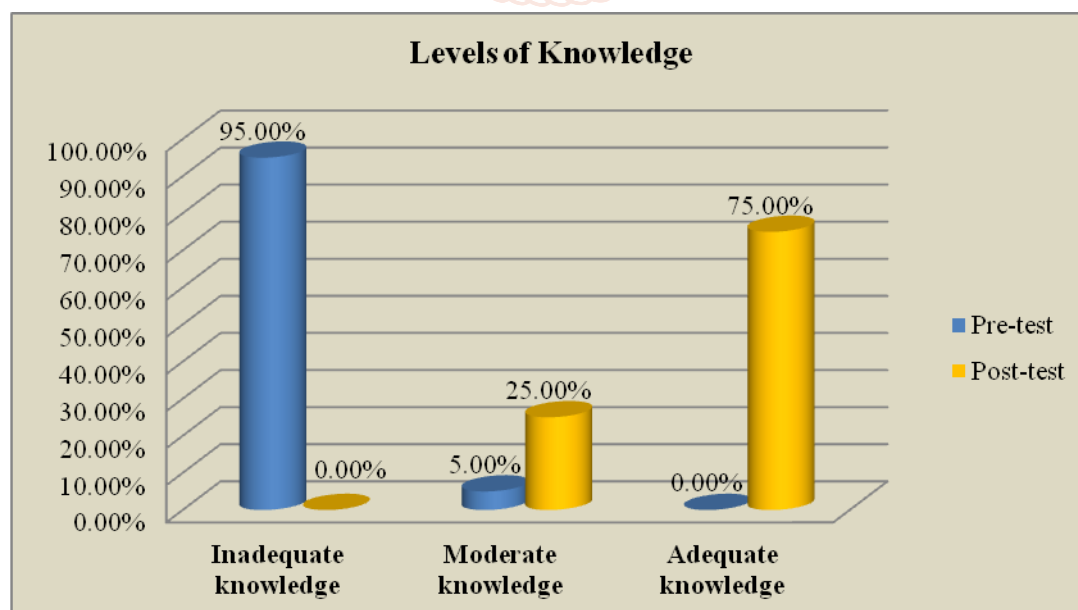


Figure-1: Percentage distribution of overall gradation of pretest and posttest knowledge level

Figure 1 depicts that percentage distribution of knowledge levels regarding oral hygiene among the primary school children, in the pretest majority 95% had inadequate knowledge, remaining 5% moderate knowledge and none of them had adequate knowledge but in the post-test, the majority 75% had adequate knowledge followed by 25% moderate knowledge and nobody had inadequate knowledge.

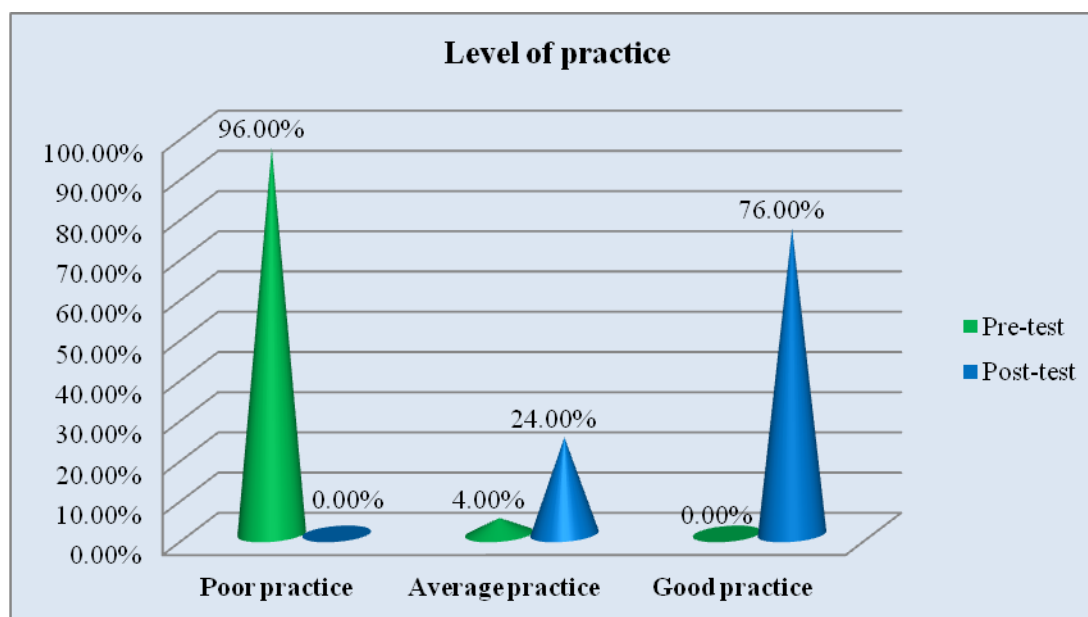


Figure-2: Percentage distribution of overall gradation of pretest and posttest Practice level

Figure 2 depicts that percentage distribution of practice score regarding oral hygiene among the primary school children, in the pretest majority 96% had poor practice, remaining 4% average practice and nobody had good practice but in the post-test, the majority 76% had good practice followed by 24% average and none of them had poor practice.

Table 2: Comparison of Knowledge score regarding oral hygiene among the primary school children between Pretest and Posttest

Test	N	Mean	sd	t	df	p
Pretest	100	9.9	2.1	41.7	99	0.0001**
Posttest	100	23.2	2.4			

**Significant ($p < 0.01$)

The table 2 shows that comparison of pre-test and post-test knowledge score regarding oral hygiene among the primary school children by using paired t-test, the mean score of post-test 23.2 ± 2.4 was greater than the pre-test mean score 9.9 ± 2.1 , the obtained t-value 41.7, $p = 0.0001$. It is inferred that there is a significant difference in pretest and posttest knowledge score. So school-based health education was effective to improve the level of knowledge regarding oral hygiene among the primary school children.

Table 3: Comparison of Practice score regarding oral hygiene among the primary school children between Pretest and Posttest

Test	N	Mean	sd	t	df	p
Pretest	100	3.7	1.3	33.9	99	0.0001**
Posttest	100	9.7	1.2			

**Significant ($p < 0.01$)

The table 3 demonstrates that comparison of pretest and posttest practice score regarding oral hygiene among the primary school children by using paired t-test, the mean score of posttest 9.7 ± 1.2 was greater than the pretest mean score 3.7 ± 1.3 , the obtained t-value 33.9, $p = 0.0001$. It is inferred that there is a significant difference in pretest and posttest practice score. So school-based health education was effective to improve the level of practice regarding oral hygiene among the primary school children.

Table 4: Association between posttest knowledge and practice levels with their demographic variables

SN.	Demographic data	Knowledge		Practice	
		χ^2	p	χ^2	p
1	Age	10.3	0.03*	10.1	0.04*
2	Sex	0.22	0.64	0.04	0.84
3	Socio Economic status	2.1	0.36	8.9	0.01**
4	Father's Education	3.5	0.48	2.3	0.69
5	Mother's Education	11	0.01**	16.7	0.001**

6	Father's occupation	1.03	0.59	0.62	0.73
7	Mother's occupation	1.9	0.39	3.1	0.22
8	No. of siblings	1.6	0.66	1.7	0.63
9	Source of information	4.5	0.21	1.2	0.76
10	Monthly family income	6.2	0.10	5.9	0.12

*Significant ($p < 0.05$)**Significant ($p < 0.01$)

Table 4 indicates that Chi-square value in posttest score of knowledge and practice regarding oral hygiene among the primary school children with their selected demographic variables. There was an association between knowledge score with their demographic variables like age ($\chi^2 = 10.3$, $p = 0.03$) and mothers educational status ($\chi^2 = 11$, $p = 0.01$) and all the other variables were not associated with the knowledge score ($p > 0.05$). There was an association between practice score with their demographic variables like age ($\chi^2 = 10.1$, $p = 0.04$), socio economic status ($\chi^2 = 8.9$, $p = 0.01$) and mothers educational status ($\chi^2 = 16.7$, $p = 0.001$) and all the other variables were not associated the knowledge score.

DISCUSSION

The present study results noticed that the school-based health education was effective to improve the knowledge and practices of primary school children about oral hygiene. These results were supported by Ahmad M et al^[16] which found that primary school children's oral hygiene can be improved by educational intervention and by proper techniques of tooth brushing. Another study by Halawany HS^[17] reported that a structured school-based intervention program was effective ($p < 0.05$) in improving the knowledge and self-reported oral health behavior of children.

These results were also consistent by Kaur P^[18] which concluded that Structured Teaching Programme was effective to enhance the knowledge regarding Oral Health Among Students in a Selected Government Primary Schools of Punjab ($t = 12.76$, $p = 0.02$). Kumar S et al^[19] reported that oral health education programs can improve the knowledge, attitude and practice regarding oral hygiene maintenance among school going children.

IMPLICATION AND RECOMMENDATIONS

Nurse educators could use these health education modules to enrich the knowledge and practices of oral hygiene among children and thereby reduce the health issues associated with it. This study benefits many organizations to conduct awareness programs, seminars, workshops etc. for preparing community health nurses, ASHA workers, anganwadi teachers and significant others in order to prevent oral problems of children who belong to rural areas. A similar study can be replicated on a large scale for more reliability and wider generalization. A comparative study can be done on rural and urban school children.

CONCLUSION

School-based health education was effective to improve the knowledge and practices regarding oral hygiene among the primary school children. This study also observed that there was an association between primary school children's knowledge score with their demographic variable like age and mothers educational status and practice score was associated with demographic variables like age, socio economic status and mothers educational status. The study is limited to primary school children who belong to rural communities from Tumkur, Karnataka, India. There is a solid need to implement any kind of educational and teaching programs to improve the oral hygiene of children from rural backgrounds.

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